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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/512,336	02/24/2000	Seiichi Fukuda	SON-1745	5387

7590

07/17/2003

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Washington, DC 20036

EXAMINER

CHEN, KIN CHAN

ART UNIT

PAPER NUMBER

1765

DATE MAILED: 07/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Advisory Action**

Application No.

09/512,336

Applicant(s)

FUKUDA, SEIICHI

Examiner

Kin-Chan Chen

Art Unit

1765

--Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 10 July 2003 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

**PERIOD FOR REPLY [check either a) or b)]**

- a) ☐ The period for reply expires \_\_\_\_\_ months from the mailing date of the final rejection.
- b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection. ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☐ A Notice of Appeal was filed on \_\_\_\_\_. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.
2. ☐ The proposed amendment(s) will not be entered because:
- (a) ☐ they raise new issues that would require further consideration and/or search (see NOTE below);
  - (b) ☐ they raise the issue of new matter (see Note below);
  - (c) ☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
  - (d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: \_\_\_\_\_

3. ☐ Applicant's reply has overcome the following rejection(s): \_\_\_\_\_.
4. ☐ Newly proposed or amended claim(s) \_\_\_\_\_ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
5. ☒ The a) ☐ affidavit, b) ☐ exhibit, or c) ☒ request for reconsideration has been considered but does NOT place the application in condition for allowance because: see the attached sheet.
6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.
7. ☐ For purposes of Appeal, the proposed amendment(s) a) ☐ will not be entered or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

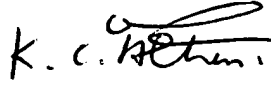
Claim(s) allowed: \_\_\_\_\_

Claim(s) objected to: \_\_\_\_\_

Claim(s) rejected: \_\_\_\_\_

Claim(s) withdrawn from consideration: \_\_\_\_\_

8. ☐ The proposed drawing correction filed on \_\_\_\_\_ is a) ☐ approved or b) ☐ disapproved by the Examiner.
9. ☐ Note the attached Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_
10. ☐ Other: \_\_\_\_\_

  
Kin-Chan Chen  
Primary Examiner  
Art Unit: 1765

Responses to after-final request for reconsideration

1. Applicant has argued that there is no teaching in the prior art for combining the known gases, as has been stated in the office action, it would be obvious to use  $\text{CF}_4$  to etch tungsten rather than using  $\text{NF}_3$ , in Ha's process because Cathey, Jr. (col.6, lines 50-54) or Hattori teaches the equivalence among these etchants for etching tungsten. The substitution of one for the other would have expected to provide an expected result, also see case law cited above. Furthermore, Ha, Cathey, Jr. and Hattori are using these etchants for the same purpose of etching a tungsten layer. The examiner notes that applicant states the high-order fluorine gases such as  $\text{SF}_6$  results non-uniform etching of tungsten. However, it is an assertion. Applicant does not provide evidences and experimental data to support the assertion. Furthermore,  $\text{NF}_3$  in Cathey, Jr. or Hattori contains low-order fluorine, applicant does not comment on that.

Applicant has argued that neither Cathey nor Hattori teach or suggest using nitrogen. As stated in the office action, Ha teaches that tungsten film may be dry etched with mixed gas containing fluorine gas, chlorine or hydrogen bromide, oxygen and nitrogen. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. Furthermore, it would have been obvious to one with ordinary skilled in the art to add dilute or carrier gas (such as nitrogen) in the etchant.

Incorporation of a carrier or diluent was held to have been obvious. *In re Lerner*  
169 USPQ 51 (CCPA 1971); *In re Rosicky* 125 USPQ 341 (CCPA 1960).

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Applicant has argued that Yan teaches etching TiN ARC layer but does not mention etching tungsten. As stated in the office action, Ha teaches that tungsten film may be dry etched with mixed gas containing fluorine gas, chlorine or hydrogen bromide, oxygen and nitrogen. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references.

One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. In re Merk & Co., Inc., 800F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

2. In light of the comments above, the obviousness rejections are maintained.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is (703) 305-0222. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on (703) 308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-2934.



Kin-Chan Chen  
Primary Examiner  
Art Unit 1765